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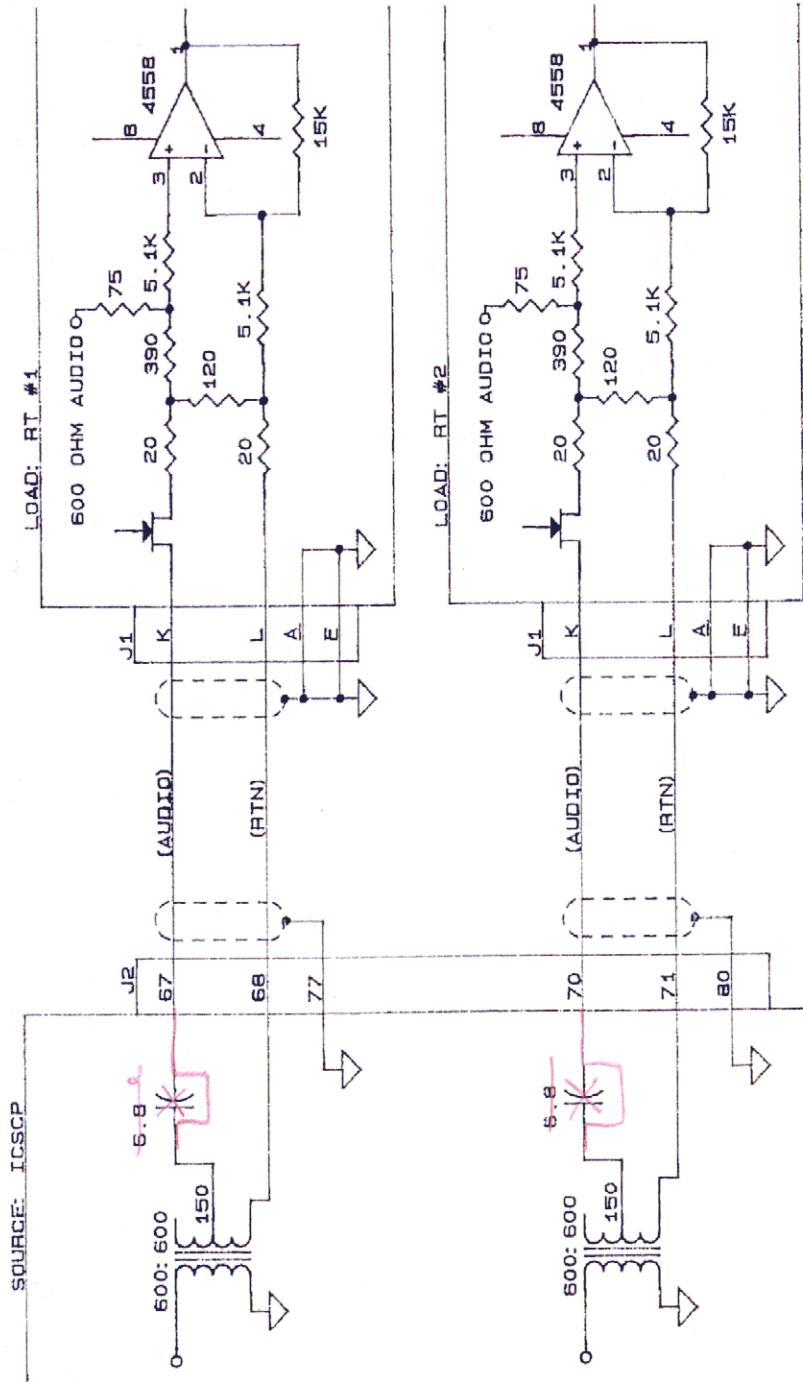
IF76301A328A473  
1 February 1991

3.2.2.1.1 XMIT AUDIO HI

1. SIGNAL TITLE: RT #1 BLACK MOD AUDIO  
RT #2 BLACK MOD AUDIO
2. SIGNAL TYPE: Audio  
Balanced
3. SIGNAL FROM: ICSCP: J2-67 (RT #1)  
ICSCP: J2-70 (RT #2)
4. SIGNAL TO: RT #1 & 2 J1-K
5. FUNCTION: Provide narrow-band modulation signal to the ARC-164 (V) transmitter
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. IMPEDANCE: SOURCE: 150 Ohms Transformer Output  
LOAD: 150 Ohms Differential Amp
  - b. CURRENT: 40 mA
  - c. INPUT VOLTAGE RANGE: 0.39 - 6.0 Vrms
  - d. MODULATION RANGE: 0 - 100% AM,
  - e. MODULATION CHARACTERISTICS:
    - 1)  $|m| \geq 80\%$  for  $V_i = 1.4$  Vrms @ 1000 Hz; -m linear function of  $V_i$  for all  $0 \leq V_i \leq 1.4$  Vrms
    - 2)  $80\% \leq |m| \leq 100\%$  for  $1.4 \leq V_i \leq 6.0$  Vrms (See NOTE)
  - f. FREQUENCY RANGE: 300 - 3500 Hz
  - g. SHIELDING REQUIREMENTS: Twisted, shielded pair with XMIT AUDIO (LO). (See Para. 3.2.2.1.2.)
  - h. SPECIAL REQUIREMENTS: Modulation percentage based upon average RF carrier. With an input of 1.0 Vrms between 300 and 3500 Hz, the demodulated audio carrier voltage shall be +1 dB, -3 dB with respect to that produced by a 1.0 Vrms input voltage @ 1000 Hz.
  - i. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 6.

NOTE: Internal potentiometer A1R35 setting defines the maximum obtainable  $|m|$ . Internal potentiometer A1R21 controls the transmit audio level to the modulator.

SIGNAL NAME: RT #1 BLACK MOD AUDIO/AUDIO RTN  
RT #2 BLACK MOD AUDIO/AUDIO RTN



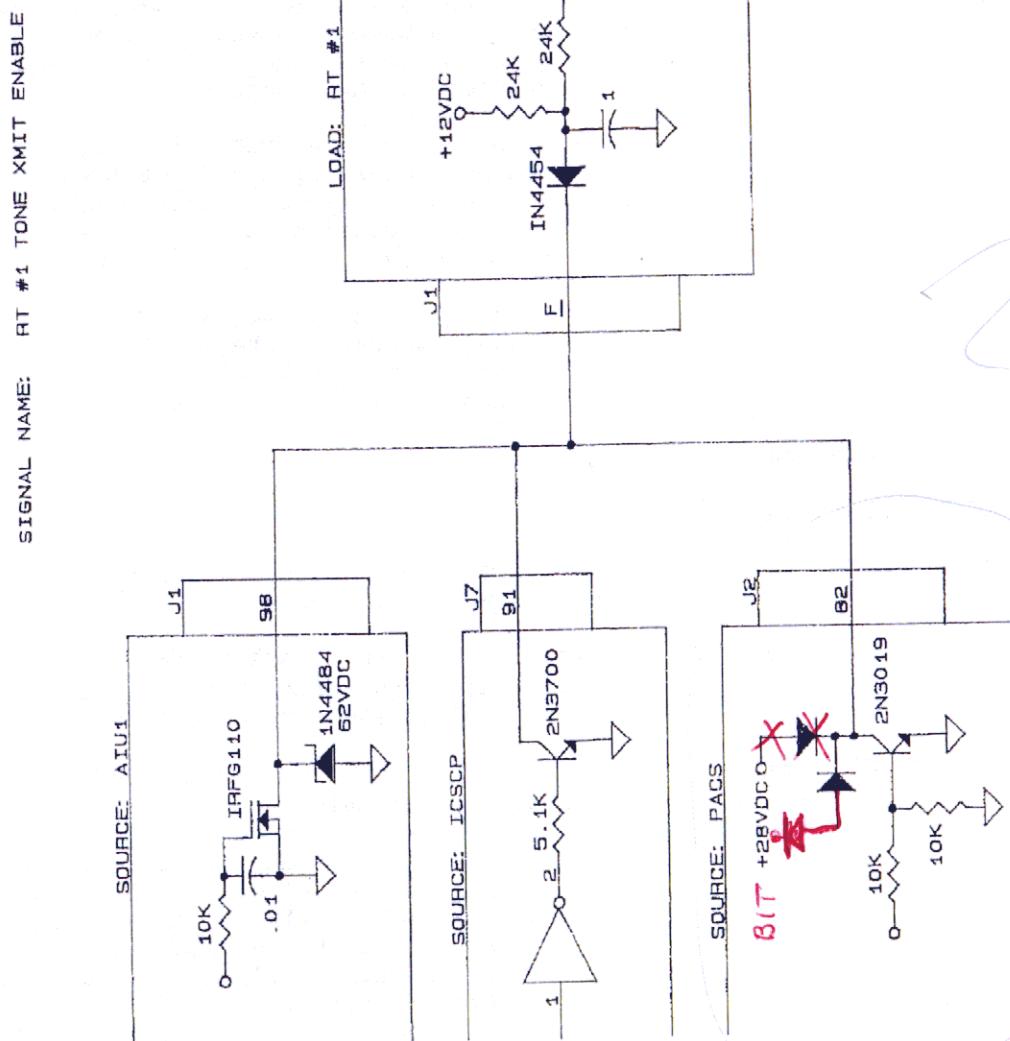
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IF76301A328A473  
1 February 1991

3.2.2.1.7 TONE KEY

1. SIGNAL TITLE: R1 UHF #1 TONE XMIT ENABLE  
R2 UHF #2 TONE XMIT ENABLE
2. SIGNAL TYPE: Discrete Bi-Level(Open/Ground)
3. SIGNAL FROM: AIU1 J1-98 (RT #1), ICSCP J7-91 (RT #1),  
PACS J2-82 (RT #1), AIU2 J3-12 (RT #2),  
ICSCP J7-92 (RT #2)
4. SIGNAL TO: RT #1 & 2 J1- E
5. FUNCTION:
  - 1) The appropriate AIU provides Tone Key control during automatic download of MWOD data. The ICSCP provides Tone Key control during manual download of MWOD data.
  - 2) If not loading a MWOD, and a TOD has been loaded, actuating the ICSCP Radio Tone switch or releasing a weapon, sets J1-E and J1-H low, causing the TOD to be transmitted followed by a 1 kHz tone.
  - 3) If not loading a MWOD, and TOD has not been loaded, actuating the ICSCP Radio Tone switch or releasing a weapon, sets J1-E and J1-H low causing only a 1 kHz tone to be transmitted.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. CODING: TRUE: TRANSMIT (Ground) (Tone Key TRUE)  
FALSE: RECEIVE (Open)
  - b. SOURCE IMPEDANCE: TRUE: AIU, ICSCP, PACS Ground  
FALSE: AIU  $\geq$  50K Ohms: Open FET Drain ?  
ICSCP, PACS: Open Collector ?
  - c. LOAD CURRENT: TRUE:  $I_{max} = 8mA$  from RT-1504/ARC-164  
FALSE: Open Circuit
  - d. VOLTAGE: TRUE:  $\leq 1.0$  VDC @ 8 mA. If J1-H is also low, the RT-1504/ARC-164 will transmit a 1 kHz tone *and TC*  
FALSE:  $\geq 50k$  ohms (+12 VDC on R/T line) causes RT to operate in receiver mode. Voltage transients shall be  $\leq 60$  VDC. Maximum open circuit voltage from R/T shall be ?  
+12 VDC (diode isolated).
  - e. SHIELDING REQUIREMENTS: None
  - f. INTERFACE CIRCUIT: Representative interface circuits for this signal are shown on pages 13 and 14.

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IF76301A328A473  
1 February 1991

3.2.2.1.8 X-MODE ENABLE

1. SIGNAL TITLE: RT #1 CIPHER SELECT  
RT #2 CIPHER SELECT
2. SIGNAL TYPE: Discrete Bi-Level (Open/Ground)
3. SIGNAL FROM: AIU1 J1-71 (RT #1)  
AIU1 J1-72 (RT #2)
4. SIGNAL TO: RT #1 & 2 J1-G  
ANTENNA SELECTOR J5-12 (RT #1)
5. FUNCTION: Provides bandwidth control for  
the main receiver assembly of the  
RT-1502/ARC-164. Deselects ADF operation by  
*Forcing RT #1 to the lower antenna.*
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. CODING: TRUE: X-Mode enabled (Ground)  
FALSE: X-Mode disabled (Open) *See item 7d.*
  - b. SOURCE IMPEDANCE: TRUE: <2 ohms  
FALSE: >50 kOhms (Open FET Drain Circuit)
  - c. LOAD CURRENT: TRUE:  $I_{max} = 5 \text{ mA}$  from RT-1504/ARC-164 (V)
  - d. VOLTAGE: TRUE: Ground:  $\leq 2.0 \text{ VDC}$  @ 4 mA allows  
the main receiver to operate  
narrow band IF mode.
  - e. FREQUENCY RANGE: DC FALSE: Open circuit voltage from  
R/T-1504/ARC-164 (V) diode  
isolated in R/T. Maximum open  
circuit voltage from R/T shall not  
exceed  $+14 \pm 2 \text{ VDC}$ . *Antenna selector has  
16 Vdc pullups on this pin via U1 and  
U3 integrated circuits.*
  - f. SHIELDING REQUIREMENTS: None
  - g. INTERFACE CIRCUIT: A representative interface circuit for this  
signal is shown on page 16.

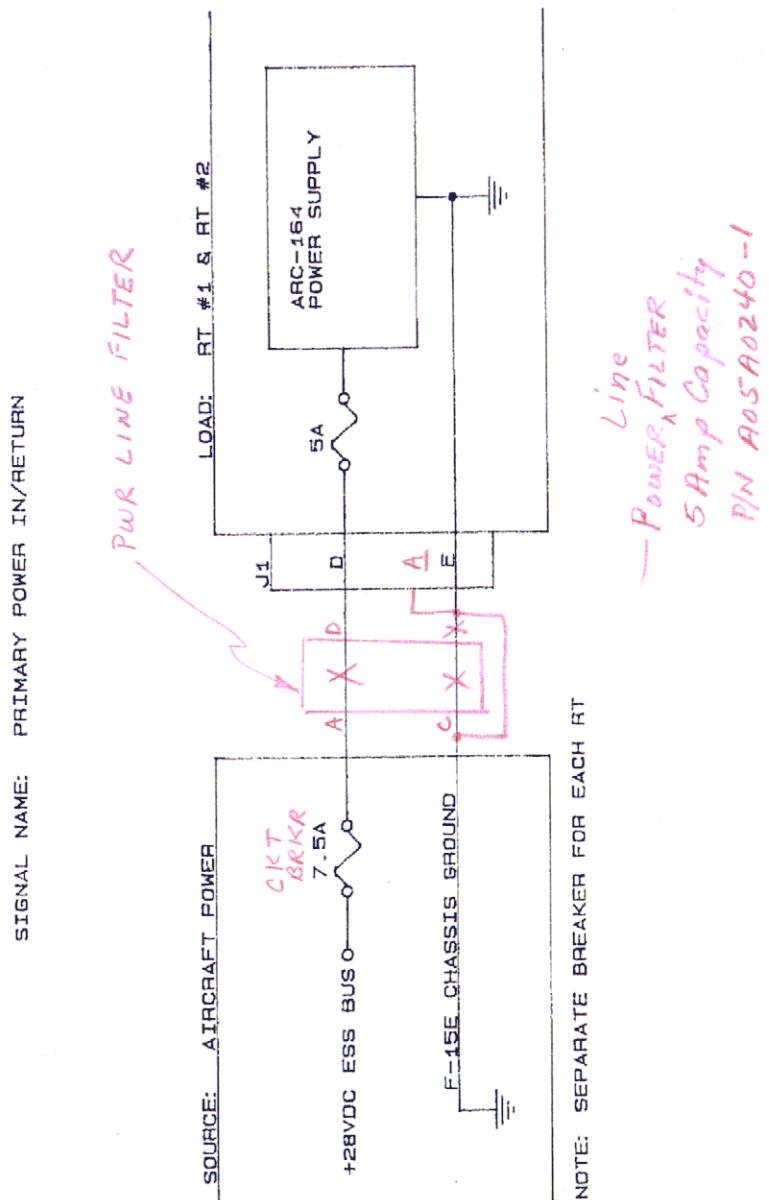
3.2.2.1.9 XMIT KEY

1. SIGNAL TITLE: RT #1 TRANSMIT KEY  
RT #2 TRANSMIT KEY
2. SIGNAL TYPE: Discrete Bi-Level (Open/Ground)
3. SIGNAL FROM: ICSCP J7-42 (RT #1)  
ICSCP J7-43 (RT #2)  
PACS J2-81 (RT #1)  
ADF Control Amp (through diode) (RT #1)  
*J1-54*
4. SIGNAL TO: RT #1 & 2 J1-H  
ANTENNA SELECTOR J5-8 (RT #1)
5. FUNCTION: Grounding the XMIT KEY line causes the RT-1504/ARC-164 to operate in the transmit mode. An open circuit on the XMIT KEY line shall cause the RT-1504/ARC-164 to operate in the receive mode of operation.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. CODING: TRUE: Transmit (Ground)  
FALSE: Receive (Open) See 7d.
  - b. SOURCE IMPEDANCE: ICSCP, PACS: Open Collector Circuits
  - c. LOAD CURRENT: TRUE:  $I_{max} = 8 \text{ mA}$  from RT-1504/ARC-164  
FALSE: Open Collector Circuit
  - d. VOLTAGE: TRUE: Ground:  $\leq 1.5 \text{ VDC}$  @ 8 mA causes the RT-1504/ARC-164 to operate in the transmit mode.  
FALSE: Open:  $\geq 50\text{k ohms}$  (+12 VDC on R/T line) causes RT-1504/ARC-164 to operate in the receive mode. Voltage transients shall be  $\leq 60 \text{ VDC}$ . Maximum open circuit voltage from R/T shall be +12 VDC (diode isolated).  
*Antenna selector has +16Vdc pullup on RT #1,*

3.2.2.1.12 PRIMARY POWER IN

1. SIGNAL TITLE: PRIMARY PWR IN
2. SIGNAL TYPE: +28 VDC
3. SIGNAL FROM: Essential/Main Bus Circuit Breaker via UHF Power Line Filter.
4. SIGNAL TO: RT #1 & 2: J1-D *Via 5 Amp Power Line Filter*
5. FUNCTION: Provides primary DC power to the RT-1504/ARC-164 R/T.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. CURRENT: 5.35 A max
  - b. VOLTAGE RANGE: 24 to 33 VDC
  - c. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 26.

Note: 28 VDC power shall meet the requirements of MIL-STD-704A for Category B equipment.



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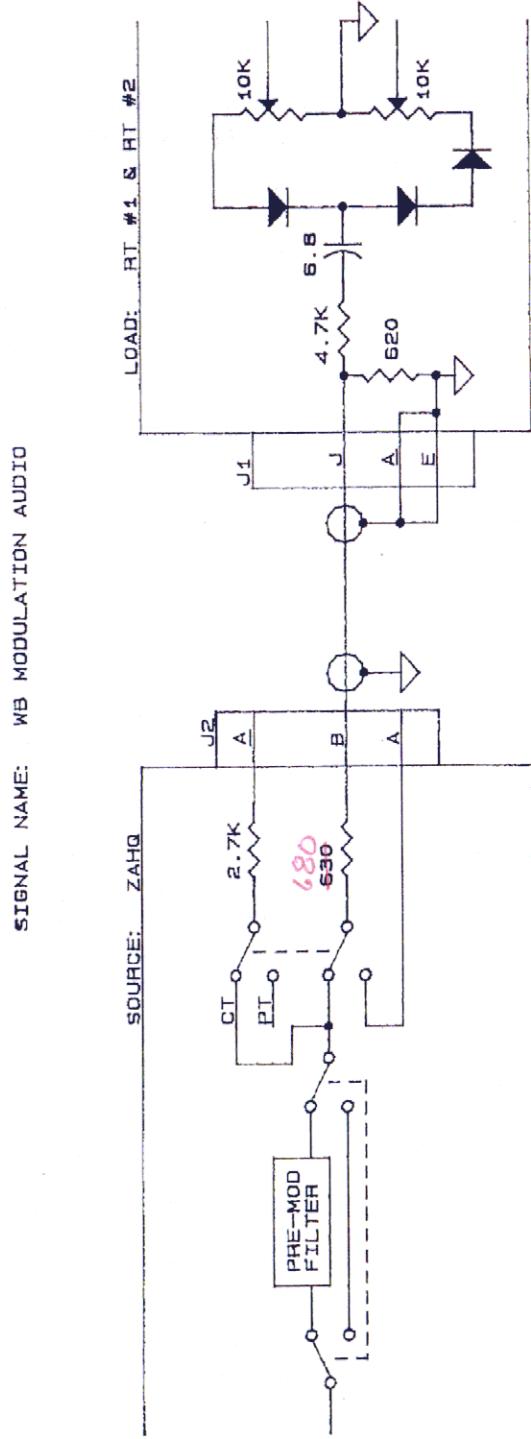
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1 February 1991

## 3.2.2.1.14 X-MODE XMIT AUDIO

1. SIGNAL TITLE: WB MODULATION AUDIO
2. SIGNAL TYPE: Audio *Input*
3. SIGNAL FROM: ZAHQ J2-B (RT #1 & 2)
4. SIGNAL TO: RT #1 & 2 J1-J
5. FUNCTION: Provide wideband modulation to the RT-1504/ARC-164 from the KY-58 secure speech equipment.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
- a. IMPEDANCE: SOURCE: 780 Ohms unfiltered,  
1680 Ohms filtered  
LOAD: 600 Ohms  $\pm$  20% resistive  
*See Note 1.*
  - b. CURRENT:  $I_{max} = 10 \text{ mA}$
  - c. INPUT VOLTAGE RANGE: 1 to 12 V<sub>p-p</sub> ~~.7 to 4.6 V<sub>rms</sub>~~  
 $V_{in} = 12 [R_L / (R_L + \text{source impedance})]$  NOTE 1
  - d. MODULATION RANGE 0 - 100%
  - e. MODULATION CHARACTERISTICS: ~~1.4 V<sub>rms</sub>~~ shall provide at least  $m = +80\%$   
 $\text{@ } 1000 \text{ Hz}$ . An input 6dB above ~~1.4 V<sub>rms</sub>~~ *3.3 V<sub>p-p</sub>* shall result in  $m \leq 100\%$ . NOTE 2
  - f. FREQUENCY RANGE: 70 - 25,000 Hz @ 18,750 bits/sec
  - g. SHIELDING REQUIREMENTS: Shielded single conductor. Shield tied to chassis and signal grounds at R/T.
  - h. SPECIAL REQUIREMENTS: None
  - i. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 28.

NOTE 1: In the aircraft the WB Modulation Audio signals from each radio are tied together resulting in a load of 300 Ohms on the ZAHQ.

NOTE 2: The internal potentiometer A1R35 defines the maximum percent modulation. This potentiometer adjusts the X-MODE Transmit Audio input level. As Transmit Audio is increased past the maximum modulation level, the percentage modulation does not increase, but the modulated signal will go into distortion.



3.2.2.2 RT-1504/ARC-164 UHF Receiver Transmitter Output Signals.

This section defines the characteristics of the output signals of the RT-1504/ARC-164 to the F-15 interconnecting equipment.

3.2.2.2.1 RECV AUDIO HI

1. SIGNAL TITLE: RT #1 NB Audio  
RT #2 NB Audio
2. SIGNAL TYPE: Audio Unbalanced
3. SIGNAL FROM: RT #1 & 2 J1-X
4. SIGNAL TO: ICSCP J2-59 (RT #1)  
ICSCP J2-18 (RT #2)
5. FUNCTION: Provide 150 Ohm or 600 Ohm (300-3500 Hz) narrowband audio output from the RT-1504/ARC-164.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. IMPEDANCE: SOURCE: 150/600 Ohms (300-3500 Hz)  
Resistive  
  
LOAD: 150 Ohms (300-6000 Hz)  
transformer in ICSCP
  - b. CURRENT:  $I_{max} = 50 \text{ mA}$
  - c. VOLTAGE RANGE: 5.20 to 7.35 V<sub>rms</sub> across 150 Ohms. (*i.e. Typically 7.0V audio power between .180 and .360 Watts*)  
with 1000 microVolt RF Input (*Open Circuit*) m = 90% @ 1K Hz AM, *Transmit sidetone Shall be 4.4Vrms for a Black Mod Audio Input (J1-X)*  
300-3500 Hz of 1.4Vrms at 1KHz.
  - d. FREQUENCY RANGE: 300-3500 Hz
  - e. SHIELDING REQUIREMENTS: Twisted, shielded pair with RECV AUDIO (LO). (See Para. 3.2.2.2.)
  - f. AUDIO RESPONSE: The Narrowband Audio output response between 300 and 3500 Hz shall be within +1dB, -3dB with respect to the reference level at 1000 Hz. Above 3500 Hz, the audio output roll-off shall be 6dB per octave or greater.
  - g. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 31.

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3.2.2.2.2 RECV AUDIO LO

1. SIGNAL TITLE: RT #1 NB Audio Return  
RT #2 NB Audio Return
2. SIGNAL TYPE: AUDIO Return  
Unbalanced
3. SIGNAL TO: ICSCP J2-60 (RT #1)  
ICSCP J2-19 (RT #2)
4. SIGNAL FROM: RT #1 & 2 J1-E
5. FUNCTION: Provide 150/600 Ohm (300-3500 Hz)  
narrowband audio return from ICSCP.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. FREQUENCY RANGE: 300-3500 Hz
  - b. SHIELDING REQUIREMENTS: Twisted, shielded pair with RECV AUDIO (HI).  
This signal is tied to the shield. The shield is tied to chassis and signal grounds at R/T.  
NOTE: J1-E must be grounded to receive TOD.  
LARC-164
  - c. AUDIO CHARACTERISTICS: See Para. 3.2.2.2.1.
  - d. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 31.

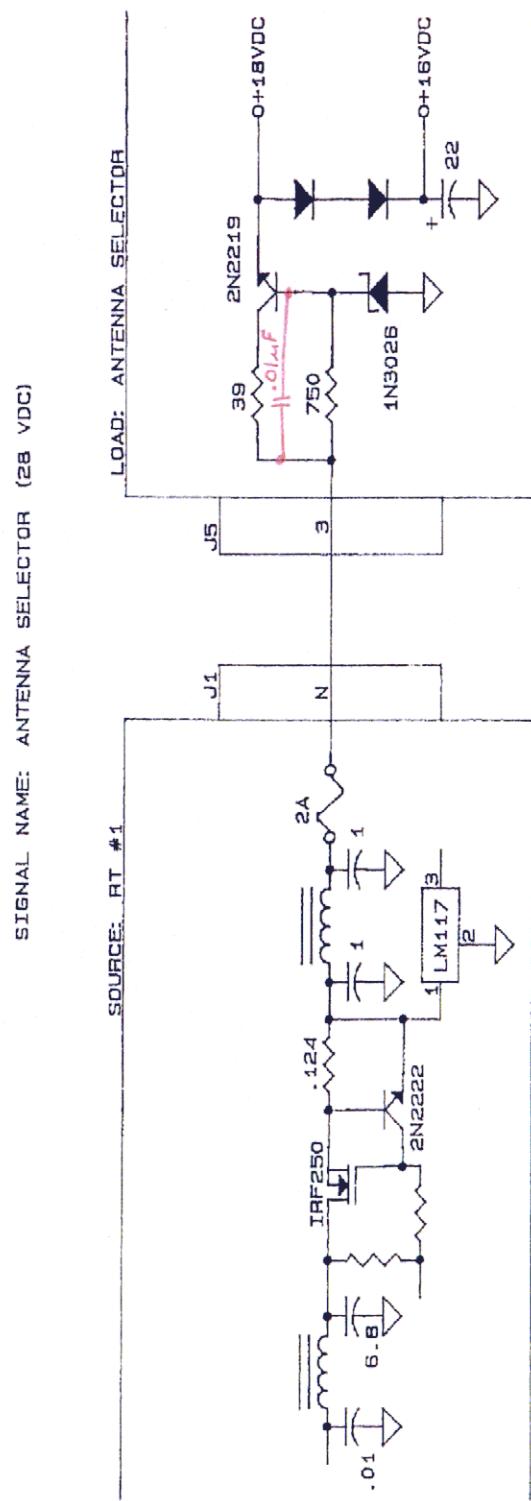
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3.2.2.2.3 X-MODE RECV AUDIO

1. SIGNAL TITLE: RT #1 WB Audio  
RT #2 WB Audio
2. SIGNAL TYPE: <sup>AUDIO</sup>  
~~Unbalanced~~
3. SIGNAL TO: ICSCP J2-45 (RT #1)  
ICSCP J2-54 (RT #2)
4. SIGNAL FROM: RT #1 & 2 J1-Q
5. FUNCTION: Provide 500 Ohm (70-25,000 Hz) audio output from the RT-1504/ARC-164(V).
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
- a. IMPEDANCE SOURCE: 500 Ohms Resistive  
LOAD: 10K Ohms in ICSCP
- b. CURRENT: .275 mA minimum
- c. VOLTAGE RANGE:  $\geq 2.75 \text{ V}_{\text{rms}}$  across 10K Ohms with an RF input of 1000 micro Volts (open circuit)  
 $m = 90\% @ 1000 \text{ Hz}$  AM
- d. FREQUENCY RANGE: 70 - 25,000 Hz
- e. SHIELDING REQUIREMENTS: Single, shielded wire. Shield is tied to chassis and signal grounds at the R/T.
- f. AUDIO RESPONSE: The wideband audio output shall be +3 dB between 70 Hz and 20 kHz and +3 dB, -5 dB between 20 kHz and 25 kHz with respect to the reference at 1000 Hz. The audio output from the R/T shall be ahead of the squelch circuit.
- g. SPECIAL REQUIREMENTS: The time delay through the RT-1504/ARC-164 (V) (from RF antenna input to wideband audio output) shall be between 18 and 42 microseconds. Measurement of the delay shall be made with respect to the negative going portion of the RF signal envelope. The wideband audio return from the ICSCP shall be chassis ground at the R/T.
- h. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 34.

3.2.2.2.4 SIGNAL GROUND

1. SIGNAL TITLE: WB Audio Return
2. SIGNAL TYPE: Wideband Audio Return  
*Unbalanced*
3. SIGNAL FROM: ICSCP J2-44 (RT #1)  
J2-55 (RT #2)
4. SIGNAL TO: RT #1 & 2 J1-A
5. FUNCTION: Provides a return for the Wideband Audio signal (per Para. 3.2.2.2.3) from the ICSCP to the RT-1504/ARC-164. This pin also serves as the signal return for the R/T.
6. NUMBER OF WIRES: 1
7. SIGNAL CHARACTERISTICS:
  - a. INPUT IMPEDANCE:  $\leq 0.1$  Ohms
  - b. SHIELDING REQUIREMENTS: This pin is the shield for X-MODE RECV AUDIO (Para. 3.2.2.2.3). Tied to PRIMARY PWR RTN (Para. 3.2.2.1.13) and F-15 Chassis ground external to R/T.
  - c. INTERFACE CIRCUIT: A representative interface circuit for this signal is shown on page 34.



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3.2.2.2.7 (U) GUARD AUDIO

1. <u>SIGNAL TITLE:</u>	GUARD AUDIO	
2. <u>SIGNAL TYPE:</u>	AUDIO	
3. <u>SIGNAL TO:</u>	ZAHQ	J2-F (RT #1 & 2)
4. <u>SIGNAL FROM:</u>	RT #1 & 2	J1-B
5. <u>FUNCTION:</u>	Provides guard audio from the guard receiver to the KY-58 and allows guard monitoring in cipher mode.	
6. <u>NUMBER OF WIRES:</u>	1	
7. <u>SIGNAL CHARACTERISTICS:</u>		
a. IMPEDANCE	Source: 300 Ohms $\pm$ 20% Resistive (two 600 Ohms $\pm$ 20% in parallel) Load: 680 Ohms Resistive	
b. CURRENT:	Imax = 50 mA	
c. VOLTAGE RANGE:	1.0 to 2.0 V <sub>rms</sub> across 300 Ohms with an RF input of 1000 Volts <del>(open-circuit)</del> m = 90% @ 1000 Hz AM	
d. FREQUENCY RANGE:	300 - 3500 Hz	
e. SHIELDING REQUIREMENTS:	Shielded single conductor. Shield tied to chassis and signal grounds at R/T.	
f. AUDIO RESPONSE:	The Guard Audio output response between 300 and 3500 Hz shall be within +1dB, -3dB with respect to the reference level at 1000 Hz. Above 3500 Hz, the audio output roll-off shall be 6dB per octave or greater.	
g. INTERFACE CIRCUIT:	A representative interface circuit for this signal is shown on page 40.	

3.2.2.3 (U) RT-1504/ARC-164 (V) RF interfaces. This section defines the ARC-164 (V) interfaces that consist of RF input and output signals that use the same transmission line. A simplified block diagram of the F-15E CNI equipment and antennas is shown in Figure 1.

3.2.2.3.1 (U) Antenna Input/Output

1. SIGNAL TITLE: Antenna Input/Output
2. SIGNAL TYPE: Radio Frequency (RF)
3. SIGNAL TO/FROM:

Antenna Selector	J1-1 (RT #1)
RT #1	J2-1
Lower UHF/L-Band Antenna	J1-1 (RT #2)
RT #2	J2-1
4. FUNCTION: Transmit and receive UHF and TACAN transmissions.
5. NUMBER OF WIRES: 1
6. SIGNAL CHARACTERISTICS:
  - a. IMPEDANCE 52 Ohms
  - b. FREQUENCY RANGE: 225.000 to 399.975 MHz
  - c. POWER OUTPUT(ARC-164):  $\geq 10$  Watts AM
  - d. INPUT VOLTAGE (RANGE): 0-1.5 V<sub>rms</sub> (open circuit)
  - e. VSWR: 2.5 : 1.0 Max.
  - f. SPECIAL REQUIREMENTS: Coaxial cable

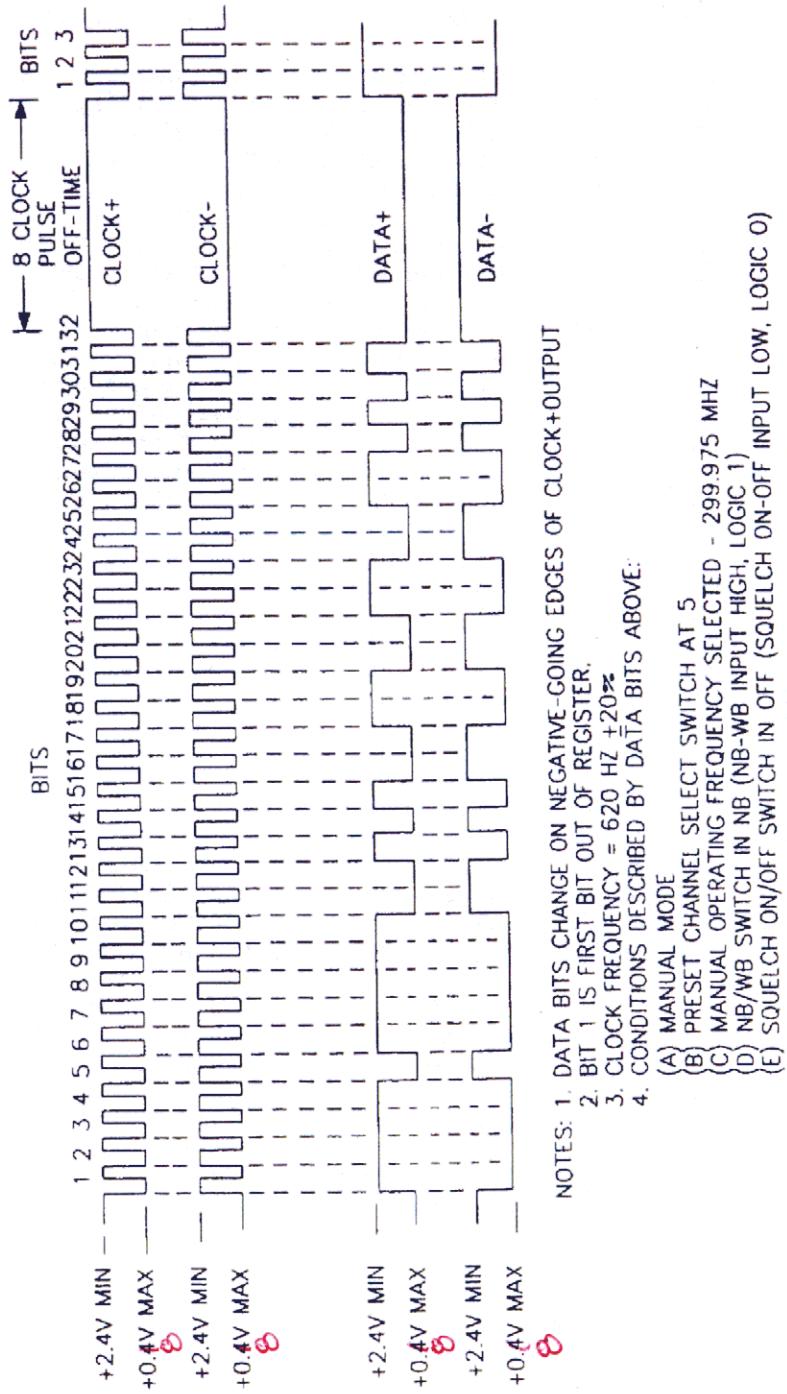


Figure 3

Clock and Data Inputs

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RT-1504/ARC-164

BIT NO.	LOGIC LVL	DATA(+) DATA(-)	FUNCTION	DATA & OUTPUT DESCRIPTION
1	NEGATIVE	LO	HI	RT Channel 1 0 for Chan 1/11; 1 for all other
2	NEGATIVE	LO	HI	RT Channel 2 0 for Chan 2/12; 1 for all other
3	NEGATIVE	LO	HI	RT Channel 3 0 for Chan 3/13; 1 for all other
4	NEGATIVE	LO	HI	RT Channel 4 0 for Chan 4/14; 1 for all other
5	NEGATIVE	LO	HI	RT Channel 5 0 for Chan 5/15; 1 for all other
6	NEGATIVE	LO	HI	RT Channel 6 0 for Chan 6/16; 1 for all other
7	NEGATIVE	LO	HI	RT Channel 7 0 for Chan 7/17; 1 for all other
8	NEGATIVE	LO	HI	RT Channel 8 0 for Chan 8/18; 1 for all other
9	NEGATIVE	LO	HI	RT Channel 9 0 for Chan 9/19; 1 for all other
10	NEGATIVE	LO	HI	RT Channel 10 0 for Chan 10/00; 1 for all other
11	NEGATIVE	LO	HI	RT Channel 11 0 for Chan 1-9 and 200; 1 Chan 10-19
12	NEGATIVE	LO	HI	Mode 0 for Manual and Have Quick; 1 for Manual and Channel (Note 7)
13	NEGATIVE	LO	HI	Mode 0 for Guard and Have Quick; 1 for Manual and Channel (Note 7)
14	POSITIVE	HI	LO	200/300MHz 0 for 200; 1 for 300
15	POSITIVE	HI	LO	10 MHz
16	POSITIVE	HI	LO	20 MHz Positive Logic BCD
17	POSITIVE	HI	LO	40 MHz
18	POSITIVE	HI	LO	80 MHz
19	POSITIVE	HI	LO	1 MHz
20	POSITIVE	HI	LO	2 MHz
21	POSITIVE	HI	LO	4 MHz
22	POSITIVE	HI	LO	8 MHz
23	POSITIVE	HI	LO	0.1 MHz
24	POSITIVE	HI	LO	0.2 MHz
25	POSITIVE	HI	LO	0.4 MHz
26	POSITIVE	HI	LO	0.8 MHz
27	POSITIVE	HI	LO	0.05 MHz 0 for .000 & .025; 1 for .050 & .075
28	NEGATIVE	LO	HI	0.025 MHz 1 for .000/.050; 0 for .025 & .075
29	NEGATIVE	LO	HI	WB/NB 0 for WB; 1 for NB (Note 1)
				HQ-T/HQ-A 0 for HQ Mode T; 1 for HQ Mode AC or AM (Notes 2) 4,5,6
30	NEGATIVE	LO	HI	Squelch 0 for disable; 1 for enable
				Disable 1 for enable (Note 3)
31	POSITIVE	HI	LO	Spare Fixed to 1
32	POSITIVE	HI	LO	Spare 0 fixed for all radios

NOTES: 1 AIU shall control the WB/NB selection.  
 2 Valid for RT #1 when Bits 12 and 13 are both "0".  
 3 AIU shall keep this bit enabled.

Figure 4

Data Bit Identification  
RT-1504/ARC-164

4. HQ mode T Commands radio to receive HQ time.  
 5 HQ mode AC is antijam channel mode.  
 6 HQ mode AM is antijam manual mode.  
 7. In the F-1SE, when quade mode is selected, the AIU sends an undefined channel number.

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**AIU SERIAL DATA TO RADIO**

Channel/Frequency	Duration	Channel/Manual
HQ LOAD	20 220.025	500 ± 100 msec
WOD1 SEGMENT 1	20 ####.###	275 + 100, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
WOD1 SEGMENT 2	19 ####.###	275 + 100, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
WOD1 SEGMENT 3	18 ####.###	275 + 100, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
WOD1 SEGMENT 4	17 ####.###	275 + 100, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
WOD1 SEGMENT 5	16 ####.###	275 + 100, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
WOD1 SEGMENT 6	15 ####.###	275 + 100, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
WOD1 SEGMENT 7	14 ####.###	275 + 500, -50 msec
TONE <b>KEY CONTROL</b>	150 ± 50 msec	Manual
OPER/VER	20 220.000	500 ± 100 msec
NORMAL		Channel

as currently implemented

**Key Control**

NOTE: Tone is applied when segment timing is complete and must be removed before application of next segment.

FIGURE 5  
AUTOMATIC MWOD DOWNLOAD TIMING  
*(AIU to radio)*